# TECHNICAL REVIEW DOCUMENT OPERATING PERMIT 950PEA041

to be issued to:

Centex Eagle-Gypsum Company, LLC Eagle County Source ID 0370029

> Prepared by David H. Webb February 3, 1997 Revised April 20, 1997

# I. Purpose:

This document establishes the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA, the Public and other interested parties. The conclusions made in this report are based on information provided in the original application submittal of March 1, 1995, supplemental technical submittals of March 14, June 23, 1995, and March 8, July 26, 1996, as well as numerous phone contacts with the applicant.

# II. Source Description:

This source is primarily classified as a gypsum wallboard manufacturing facility defined under Standard Industrial Classification 3275. Gypsum rock is mined, crushed, calcined and then mixed with dry additives prior to addition of water. The resulting slurry is placed between two layers of paper where it hardens to form wallboard and fuses with the paper. The wallboard is dried then stacked for shipment. Facility electrical needs are met with the use of two natural gas-fired turbines, with diesel generator backup.

The facility is located in the town of Gypsum, CO, Eagle County, in an area designated as attainment for all criteria pollutants. This source is minor with respect to Prevention of Significant Deterioration (PSD) requirements with facility wide emissions as follows:

<u>Pollutant</u>	Potential to Emit (tpy)	Actual (tpy)
PM	49.5	15.3
PM-10	13.4	11.9
$NO_x$	191.3	92.1
CÔ	43.9	23.8
VOC	22.4	3.5
$SO_2$	2.0	0.2
HAPs	8.4	2.5

Potential to Emit values are based on information submitted with the Title V

application. PTE is defined in the application as the maximum allowable emissions listed in the Construction Permits issued for the site. Actual emissions are based upon actual production and fuel use rates for the 12-month period ending September 30, 1996. This data was submitted as part of a technical information request to the applicant.

It should be noted that this source was originally permitted as a synthetic minor for PSD based on the potential for  $NO_{\chi}$  emissions to exceed 250 tons per year. Eagle Gypsum accepted federally enforceable permit limitations on the cogeneration turbines on site for fuel use and hours of operation, and proposed the use of water injection to control  $NO_{\chi}$ , to effectively limit emissions below the PSD threshold (See further discussions for Turbines below).

The facility is located within 100 kilometers of the Eagle's Nest, La Garita, Maroon Bells-Snowmass, and West Elk Wilderness Areas. Each of these is designated as a Federal Class I area.

The facility stores quantities of propane that exceed 10,000 pounds, the threshold quantity for Accidental Release provisions of Section 112(r) of the Clean Air Act. Therefore, a Risk Management Plan must be developed by Eagle Gypsum in accordance with the requirements and schedule set forth in the federal regulations.

Eagle-Gypsum certified to compliance with all applicable requirements at the time of Title V application submittal.

Note that this facility underwent a change of ownership in February of 1997, and is no longer Eagle-Gypsum Products. The facility is now owned by the Centex Eagle Gypsum Company, LLC.

#### III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

<u>Units P001</u> - Two(2) Allison Natural Gas Fired Co-Generation Turbines, Model 501-KB5, Serial Nos. ASP742 and ASP912. Propane as Back-Up Fuel.

## Discussion:

**1. Applicable Requirements-** Prior to Title V application submittal, Colorado Construction permit 89EA432-1 defined applicable requirements for these two turbines. The turbines are also subject to the New Source Performance Standard for Stationary Gas Turbines (40 CFR 60.33 - NSPS Subpart GG), as adopted in Colorado Regulation No. 6, since they are greater than 10 MMBtu/hr heat input and were installed after October 3, 1977. The NSPS establishes limits on the concentration of NO<sub>x</sub> and SO<sub>2</sub> in the turbine exhaust, a limit on the sulfur content of the fuel, as well as

monitoring and testing procedures. The NSPS requirements have been incorporated into the Draft Permit. Colorado Regulation No. 1, Section VI.B.4.c.1 sets a 0.8 lb/MMbtu restriction on  $SO_2$  emissions from the units. In addition, Colorado Construction Permit 89EA432-1 established hourly and annual emission limits for PM, CO, VOC and  $NO_x$ , hourly and annual fuel consumption limitations, a 20% Opacity limit from Colorado Regulation 1, and a restriction on hours of operation for each unit. All of these requirements have been incorporated into the Draft Permit.

Previous requirements for the use of water injection to control  $NO_x$  emissions and installation of a continuous emission monitor (CEM) to measure  $NO_x$  were removed when permit 89EA432-1 was granted Final Approval. Eagle Gypsum had gathered several months worth of data that indicated electrical demand at the plant was considerably less that originally anticipated. Eagle Gypsum agreed to accept a lower fuel use limitation representing more representative operating conditions in exchange for dropping the CEM and water injection requirements.

**2. Emission Factors-** Emissions from these turbines are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment, turbine design specifications, and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NOX), Carbon Monoxide (CO), Volatile Organic Compounds (VOC) and Particulate Matter (PM). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. The Compliance Emission Factors listed in the Draft Permit were calculated as follows:

Note that stack testing for CO and NO<sub>x</sub> was conducted in March of 1991, resulting in the following emission rates at 90% load:

<u>Pollutant</u>	Emission Rate (lb/hr)	
NO <sub>x</sub>	13.36	
CO	3.33	

**3. Monitoring Plan-** Conditions 1.1 to 1.7 of the Operating Permit list the Monitoring and Recordkeeping provisions necessary to verify compliance with Applicable Requirements for these two turbines. Specific monitoring guidance for Combustion Turbines in Attainment areas has been developed by the Division as shown on the attached Grid titled "Compliance Scenario Summary - Turbines." The grid defines monthly fuel use determination and emission calculation as the minimum monitoring for the units. Monthly portable monitoring for  $NO_X$  and CO will be required in place of the semi-annual portable monitoring listed on the grid since demonstrating compliance with NSPS GG limitations requires a higher level of scrutiny . NSPS Subpart GG also requires that sulfur and nitrogen content of the fuel burned be determined daily. However, based on EPA approval of alternative testing

programs for turbines burning natural gas, sulfur content verification will not be required. The natural gas used to fuel the turbines is supplied by KN Energy (Rocky Mountain Natural Gas) and has undergone processing to achieve strict pipeline quality standards. Sulfur content has been determined to be negligible, and therefore, continued use of pipeline quality natural gas will be adequate demonstration for compliance with fuel sulfur content and  $SO_2$  emission limits listed in the Operating Permit. Nitrogen content verification will not be required since this value is only used to provide an emission allowance in the NSPS equation for allowable  $NO_\chi$  emissions. Eagle Gypsum has accepted a 170 ppm limit for  $NO_\chi$  assuming no allowance. Waiving fuel nitrogen content verification is consistent with EPA policy as outlined in the attached August 14, 1987 memo.

Burning solely natural gas or propane in these turbines will be acceptable demonstration of compliance with the Opacity standard, and SO<sub>2</sub> limitations (Conditions 1.3 and 1.5).

**4. Compliance Status-** Eagle Gypsum has submitted data for the twelvemonth period ending 9/30/96 showing compliance with all emission and fuel use limits for the turbines. March, 1991 stack testing was used to show compliance with the  $NO_{\chi}$  ppm limit defined by NSPS Subpart GG. Maximum ppm was 112.7 during the test, well below the 170 ppm limit. Therefore, the Division considers the turbines to be currently operating in accordance with all applicable requirements.

Facility Process Units subject to New Source Performance Standards for Non-Metallic Mineral Processing Plants (Subpart OOO):

**P003- Dry Additives Conveying System** 

P006- Screening, Crushing of Gypsum Ore

P007- Rock Receiving Station

P008- Stucco Storage w/ Associated Conveyors and Elevators

P010- Crushed Ore Storage

**P011- Accelerator Mill** 

P012- Impact Mills for Calcining of Gypsum

#### Discussion:

1. Applicable Requirements- Colorado Construction Permits 89EA432-2,5,6,7,9,10,11 respectively have been issued previously to Eagle Gypsum defining applicable requirements for these processes. These permits establish hourly and annual emission limits of PM and PM-10, and production limitations on the amount of wallboard produced (MM ft²/yr), the amount of material processed (tons/yr), and/or the amount of fuel consumed. All of these processes are subject to the provisions of 40CFR60.67, the New Source Performance Standard for Non-Metallic Mineral Processing plants (Subpart OOO) as adopted in Colorado Regulation No. 6. This NSPS sets a 0.05 g/dscm emission limitation on PM emissions, as well as a 7% Opacity limitation on all affected facilities or conveyor transfer points within a Non-

Metallic Mineral Processing Plant. The provisions of the Construction Permits, including the noted NSPS standards, have been incorporated into the Draft Permit as applicable requirements.

Colorado Regulation No. 1, Section III.C defines process weight rate equations for manufacturing processes which limit particulate emissions based on the tons per hour of material processed. It has been determined, however, that the hourly limits defined by the Construction Permits listed above, and accepted by Eagle Gypsum, are more stringent than the Regulation 1 calculated limit. Therefore, the hourly limits determined through the process weight rate equation have not been incorporated into the Draft Permit.

As part of the technical review for the Impact Mills, the Division determined that the NSPS for Calciners and Dryers in Mineral Industries, Subpart UUU (40 CFR 60.730) applied. This regulation limits emissions from calciners to 0.092 g/dscm and 10% opacity. In an effort to streamline their permit application and reduce redundancy in the applicable regulations, Eagle-Gypsum requested that the requirement to meet these limitations be eliminated since the source was also subject to the more stringent requirements of NSPS Subpart OOO (see attached July 25, 1996 letter). The Division reviewed and approved the request.

- 2. Emission Factors- The Inventory Emission Factors listed in the Draft Permit for the individual processes are based on either the lb/hr emission rate determined during the March 1991 stack testing at the Eagle Gypsum plant or established AP-42 factors. Citation for the emission factors is included in the specific conditions for each process. These factors will be used to determine emissions for annual fee calculation only if the control system monitoring requirements defined in the Permit have been met.
- 3. Monitoring Plan- Baghouse inspection and maintenance procedures will be used to insure continuing optimal function of the control equipment for each of these processes. An initial stack test in accordance with EPA Methods 5 or 17 will establish current compliance with the 0.05 g/dscm NSPS limit. This test is not required for the Dry Additives Conveying System because this process vents inside the main production building (See the attached letter from the Division dated September 5, 1995). If the defined maintenance procedures are followed, and production levels are at or below listed limitations, compliance with the NSPS gram loading as well as hourly and annual particulate limitations will be assumed. Additional stack testing for each piece of equipment will be required in the last 18 months of the 5 year permit term.

With the exception of the Dry Additives Conveying system, EPA Method 9 Opacity observations will be conducted monthly on each of the processes to determine compliance with the 7% limitation. This frequency of Opacity monitoring was agreed upon during a meeting of March 7, 1997 following review of the draft permit by Eagle Gypsum. Opacity compliance for the Dry Additives Conveying System shall be based on visible emissions from the building vents enclosing this process. In response to a Public

Comment request by Centex Eagle Gypsum, annual Method 22 requirements were removed for this source. Daily visual inspection of building vents and documentation of maintenance shall be required instead.

Fuel consumption in the Impact Mill burners will be determined monthly and multiplied by listed compliance emission factors to determine  $NO_{\chi}$ , CO, and VOC emission rates to be used in a rolling 12-month total.

**4. Compliance Status-** Testing programs conducted in March, 1991 and January, 1992 at the Eagle Gypsum site demonstrated compliance with NSPS limitations for each process. Subsequent annual reporting of process rates, fuel use and resultant emissions have demonstrated continuing compliance. The Division considers these processes to be operating in compliance with current applicable requirements.

## Facility Process Sources Not Subject to NSPS Subpart OOO Requirements

P004- End Trim Reclaim System w/ Baghouse Control

P005- Paper Creasing, Scoring and Buffing System w/ Baghouse Control

#### Discussion:

- 1. Applicable Requirements- The End Trim Reclaim and Paper Scoring processes at this site were determined not to be affected facilities defined for NSPS Subpart OOO in 40 CFR 60.67. Therefore, gram loading and Opacity limits in that Subpart are not applicable requirements for these sources. Construction Permits 89EA432-3,4 were previously issued to and accepted by Eagle-Gypsum Products establishing emission limits for PM and PM-10 (hourly and annual), Wallboard production limits, and a 20% Opacity limitation. These limits have been incorporated into the Draft Operating Permit as applicable requirements.
- **2. Emission Factors-**The Inventory Emission Factors listed for each process in the Draft Permit are the emission rates established during stack testing in March of 1991. They will be used for determining emissions of PM and PM-10 for calculation of annual fees if the monitoring requirements listed below are met.
- **3. Monitoring Plan-** Monitoring for these sources is similar to that required for the processes subject to NSPS Subpart OOO with the exception that no initial stack testing is required. The Division has determined that an effective preventive maintenance and inspection program will insure that the baghouses controlling these sources operate at or below the emission rates predicted by the March 1991 stack testing.

Semi-annual Method 9 readings of Opacity are required. Monthly readings were not justifiable since these sources are subject only to the standard 20% Opacity limitations, not the more stringent NSPS limitations.

**4. Compliance Status-** The testing program conducted in March, 1991 at the Eagle Gypsum site demonstrated compliance with permitted hourly limitations for each process. Subsequent annual reporting of process rates and resultant emissions have demonstrated continuing compliance. The Division considers these processes to be operating in compliance with current applicable requirements.

# <u>Unit P015</u> - Wallboard Dryer w/ Three 35 MMBtu Burners

#### Discussion:

- **1. Applicable Requirements-** Construction Permit 89EA432-12 was previously issued to and accepted by Eagle-Gypsum Products establishing emission limits for PM, PM-10,  $NO_x$ , CO, VOC and  $SO_2$  (hourly and annual), fuel consumption limits (annual), wallboard production limits (annual) and a 20% Opacity limitation. These limits have been incorporated into the Draft Operating Permit as applicable requirements with the exception of the annual wallboard production limit. Limits on other processes prior to the drying of the wallboard will effectively restrict throughput. Therefore, this limit has not been included in the Draft Permit as an applicable requirement.
- **2. Emission Factors-** The emission factors listed in the Draft Permit for this dryer are obtained from the EPA's Fire 5.0 document (450/4-90-003) for Source Classification Codes 1-02-006-02,-03, natural gas combustion from industrial boilers.
- **3. Monitoring Plan-** The established plan for monitoring monthly fuel use and calculating emissions on a 12-month rolling total and hourly average is based on the attached monitoring grid titled 'Compliance Scenario Summary Boilers'. Opacity compliance will be demonstrated by the continuous use of natural gas as fuel.
- **4. Compliance Status-** Eagle-Gypsum has submitted data for the twelve month period ending 9-96 with fuel use and associated emissions well under the limitations set in permit 89EA432-12. The Divisions currently considers this point in compliance with applicable requirements.

# **Unit P018** - Two Detroit Diesel Engines Powering Emergency Generators

#### Discussion:

**1. Applicable Requirements-** Colorado Initial Approval Construction Permit 89EA432-13 was issued August 28, 1990 defining applicable requirements for these engines: rolling twelve-month total emission limits for PM, CO,  $NO_X$ , and  $SO_2$ , rolling twelve-month total No. 2 diesel fuel consumption limitation, and 20% Opacity standard. In addition, the Colorado Regulation No. 1 limitations for  $SO_2$  emissions from fuel burning equipment of 0.8 lb/MMBtu and Opacity during start-up (30%) were determined as applicable by the Division. These limitations have been incorporated into the Draft Permit as applicable requirements.

- **2. Emission Factors-** The Compliance Emission Factors listed in the Draft Permit are from EPA's AP-42 document, Tables 3.4-2 and -5, January 1995 for Large Uncontrolled Stationary Diesel Engines.
- **3. Monitoring Plan-** Fuel Use for the engines will be determined monthly and used to calculate emissions using the Compliance Emission Factors listed in the application. The sulfur content and heat of combustion of the diesel fuel shall be determined following each new shipment to the fuel storage tanks. This data will be used in the calculation of emissions and to directly determine compliance with the 0.8 lb/MMBtu SO<sub>2</sub> limitation. Based on discussions with the applicant and historical data regarding the annual hours of operation of these engines, the Division believes it is unlikely that the engines will be operated extensively during any year. Therefore, the requirement for Method 9 Opacity readings is dependent upon extended operation, which will not be triggered during typical monthly engine test runs.
- **4. Compliance Status-** Documentation including 12-month diesel fuel use and associated emissions was submitted as part of a package to self-certify compliance with the provisions of Initial Approval Permit 89EA432-13 on October 28, 1996. The data indicated fuel use and emission levels well under permitted limits. Opacity observations conducted during a Division inspection indicated no visible plume from either diesel engine. Therefore, the Division considers these engines to be currently operating in compliance with all applicable requirements.

# **Unit P020 - Waste Recycling System**

#### Discussion:

1. Applicable Requirements- Colorado Initial Approval Construction Permit 94EA540 was issued September 11, 1996 defining applicable requirements for this process: hourly and annual recycled wallboard processing limits, hourly and annual emission limits for PM and PM-10, NSPS Subpart OOO gram/dry standard cubic meter emission limit and 7% Opacity standard, required pneumatic collection and baghouse control efficiencies for PM and PM-10, stack testing requirement for PM, requirement to supply make, model and serial number of all equipment prior to Final Approval. These terms will be incorporated into the Draft Permit as applicable, with the exception of the control efficiency requirement. It is the Division's opinion that demonstrating compliance with the NSPS outlet emission limitation will be sufficient for assuming proper baghouse efficiency. Therefore, this requirement will not be included in the Draft Permit but will be met through proper operation/maintenance procedures as outlined in the "Monitoring Plan" section below.

Final Approval of the current construction permit is not required since the stack testing requirements of the Initial Approval have been incorporated. Since the new crushing and screening equipment will not be installed until the spring or early summer of 1997, the Division believed it would be more efficient to incorporate the terms of the Initial Approval permit directly into the Operating Permit, rather than holding up OP issuance several months.

**2. Emission Factors-** The uncontrolled emission factors for each process that makes up the waste recycling system are listed below: :

Process	PM Factor	PM-10 Factor
Initial Processing:		
Apron Feed Conveyor and Transfer	0.1 lb/ton	0.06 lb/ton
Crusher/Breaker	1.0 lb/ton	0.50 lb/ton
Screw Conveyor and Transfer	0.08 lb/ton	0.05 lb/ton
Paper Baler	0.04 lb/ton	0.03 lb/ton
Modification:		
Primary Crushing	0.005 lb/ton	
Screening/Classifying	0.032 lb/ton	0.015 lb/ton

One baghouse controls the initial processing steps, while a second controls the additional crushing and screening capacity proposed as part of the modification.

- **3. Monitoring-** NSPS requirements for this process were only triggered when additional crushing capability was necessary to complete the recycling loop. Therefore, stack testing requirements (initial and within 18 months of permit issuance) will only be required for the baghouse associated with those operations. Compliance with hourly and annual emissions limits, as well as the 0.05 g/dscm NSPS limit will be demonstrated thereafter if the listed baghouse maintenance and inspection procedures are followed and processing of recycled wallboard does not exceed the hourly and annual limitations. Opacity will be measured weekly using EPA Method 9.
- **4. Compliance-** This process is still under construction, and will not be fully operational until the summer of 1997. Compliance will be determined at that time based on the results of the required performance test.

## IV. Insignificant Activities

The following sources at the site are considered insignificant activities because emission levels (actual) are expected to remain below the 2 ton per year de-minimis level for criteria pollutants in this location (Regulation No. 3, Part A):

Laboratory Rock Sample Crusher 18,000 gallon Propane tank 10,000 gallon #2 Diesel Storage Tank - 56,000 gal/yr throughput

## V. Alternative Operating Scenarios

No alternative operating scenarios were requested by Eagle-Gypsum Products in their Title V application.

#### VI. Permit Shield

Section III of the Operating Permit lists specific conditions for which the applicant requested a Permit Shield. Justification for each request was submitted as part of

a supplemental Title V submittal on June 19, 1996. Specific requests were denied for the following reasons:

40 CFR Part 68 - 112(r) Accidental Release Requirements

An 18,000 gallon propane tank exists on site. The threshold for propane under Part 68 is 10,000 pounds. The Division has determined that release from this tank may trigger Part 68 requirements and therefore cannot grant the Permit Shield for Part 68. The Division is working on language to be included in Title V permits subject to these regulations. This language may be added to the current permit draft upon finalization of this language.

40 CFR Parts 61 and 63 - Maximum Achievable Control Technology Requirements Although it does not appear that this facility emits any Hazardous Air Pollutants defined for the MACT in Part 61, the process of promulgating and finalizing source specific MACTs is ongoing. The Division maintains the position that regulations under development should not be included in Title V Permit Shields.

Colorado Regulation No. 6, Part A - New Source Performance Standards
Eagle-Gypsum requested the Permit Shield for all Subparts in this
Regulation other than Subparts GG and OOO. Subparts GG, OOO and
UUU have been identified by the Division as applicable to certain equipment
at this site. The Division feels that listing of the remaining Subparts of this
Regulation is not justified unless unique justification for each Subpart is
provided. The Division has included those Subparts for which EagleGypsum provided specific justification such as LL, D and K.

Note that the NSPS Subpart UUU standards and the Colorado Regulation No. 1 process weight rate limitations have been included in the permit shield for equipment that was subject to more stringent particulate limitations.